MOUNTAIN PINE BEETLE CONTROL PROJECT

TARGHEE NATIONAL FOREST

MASTER PLAN

FISCAL YEAR 1966

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Mountain Pine Beetle Control Project
Targhee National Forest
Master Plan
F. Y. 1966

1. History

a. Tree species infested - Pinus contorta (lodgepole pine).

b. Insect species - Dendroctinus monticola (mountain pine bark beetle).

c. Age of infestation - Mountain pine beetle was recognized in epidemic proportions on the Targhee National Forest as early as 1927, with major infestations occurring about 1930, 1948, 1959 to present. It is difficult to say in what year that epidemic infestations of the beetle originated on this forest. Evidence of past epidemics appear in the forest on old logs lying on the ground, which by their stage of deterioration, indicate beetle-killed trees of at least 50 years ago.

The present epidemic infestation was first recognized in the fall of 1958. Control efforts have been carried out each year since the spring of 1959. Financing has not allowed the treating of all infested areas. Some areas of heavy and extensive infestation were left untreated in an effort to keep the infestation from spreading in newly hit stands of timber.

Control measures appear to have been effective to the extent that buildup within some treated areas has been held within acceptable limits. However, there were extensive insect-infested areas on private, State, B.L.M., and National Forest land which were untreated. These areas have caused considerable reinfestation on the forest and made complete control impossible. Also, prior to the fall of 1964, adequate survey funds were not available. This resulted in incomplete surveys and all areas of the infestation were not detected.

Adequate survey funds were given to the forest in the fall of 1964 and all epidemic infestations were detected and surveys completed. Follow up funds available for treating were inadequate; however, and treating was possible only on high priority areas.

d. Past control - The following tabulation shows the fiscal years that treating projects were carried out on the Targhee National Forest.

Year	Trees Treated	Year	Trees Treated
1927	3,079	1954	498
1928	31,204	1959	3,197
1929	30,065	1960	5,963
1930	35,987	1961	2,983
1949	21,472	1962	9,415
1950	15,170	1963	43,787
1951	640	1964	59,988
1952	77	1965	28,298

Prior to 1961, logging of insect-infested trees was insignificant due to a lack of market. Since that time, a stud market has developed and much logging has been diverted to infested areas. This method of control has accounted for a considerable number of infested trees being removed in addition to the figures shown above.

The main method of treatment used, however, has been hand-spraying with ethylene dibromide. Small areas also have been treated by fell-and-burn method.

2. Present Infestation

a. Estimated number of infested acres by ownership:

National Forest	State	B.L.M.	Private	Total
75,410	1,520	600	6,300	83,830

b. Estimated number of trees infested by ownership:

National Forest	State	B.L.M.	Private	Total
132,400	2,000	600	25,500	160,500

c. Boundaries of infestation - (See map in Appendix):

(The estimates in items a and b above do not include the trees or acres of the main Rexburg infestation.)

3. Proposed Control

a. Suppression Objective - The objective of the F.Y. 1966 Targhee National Forest bark beetle control project is to effectively arrest the beetle epidemic on all infested areas except for the main Rexburg infestation. The Rexburg infestation is so large and complex that there is considerable doubt as to the economical and entomological feasibility of a control program. An intensive survey of the area will be made to determine if a control program is practical.

b. Work objectives -

(1) Survey all infested areas.

(2) Treat as much of the infestations as are shown under "treating units" as is possible during the fall and winter of 1965.

(3) Early in 1966, the survey results and analysis for the Rexburg infestation will be presented to the Regional Forester for his consideration.

(4) Spring work in 1966 will be the completion of any work which adverse weather during the winter made impossible to finish.

If the decision is to undertake a treating project on the Rexburg infestation, and funds are available, a spring project for this area will be initiated and carried out.

c. The following outline shows survey methods that will be used to collect the information which is necessary to proceed with fall work.

	Type of Area	Method
(1)	Entire Forest	Aerial reconnaissance.
(2)	Rexburg infestation	Intensive survey.
(3)	New areas	Intensive survey.
(4)	Not treated F.Y. 1965, but surveyed Fall 1964	Reconnaissance survey to determine buildup ratio and extent of area.
(5)	Treated F.Y. 1965 (including July)	Extensive survey to determine effectiveness of treatment.

d. Below are listed methods of treatment that will be used:

(1) Logging.

(2) Pushover and burn where practical, with Regional Forester's approval only.

(3) Fall and burn during winter where practical.

(4) Chemical treatment where the above methods are not practical to use.

The control objective is to completely suppress the epidemic infestations on each treating unit to an endemic state. However, experience has shown that follow-up treatment is generally necessary. Therefore, it is recognized that such follow-up treatment, in areas needing it, will be necessary for the following one and possibly two years in order to completely suppress the bark beetle to an endemic state.

Logging (First Line Defense)

(1) Timber sales on the Targhee Forest are being concentrated on insect-infested areas wherever possible. However, present logging and mill capacity, access, and intensity of infestation limit the amount of infested trees by logging. Other possible timber purchasers are being contacted to determine if the number of infested trees to be removed by logging can be increased. Timber sales which are now in progress and the proposed sales which are now being offered approach the upper limit of volume of the mill capacity which is available at present.

(2) Resume of planned sales program to control or assist in controlling infestation is as follows:

Sale	District	Total LP Volume	Acres
East Sheridan	Spencer	.9 MM	238
West Sheridan	Spencer	1.0 MM	250
Blind Canyon	Spencer	1.9 MM	243
Willow Creek II	Island Park	1.6 MM	200
Moose Creek	Island Park	3.2 MM	400
High Point II	Ashton	1.7 MM	212
Lyle Springs	Ashton	1.3 MM	160
Bishop Mountain	Ashton	4.8 MM	600
Elk Wallow II	Ashton	1.9 MM	237
Big Bend Ridge	Ashton	1.4 MM	175
Wolverine	Rexburg	2.1 MM	262
Fish Creek	Rexburg	3.9 MM	483
Calamity Creek	Rexburg	.8 MM	100
Misc. Small Sales	All Districts except Dubois and Swan Valley	.5 MM	62
TOTAL:		27.0 MM	3,622

(3) Estimated volume of infested timber to be cut - 2.7 MM

(4) Estimated number of infested trees to be cut - 18,700

(5) Estimated volume of uninfested trees to be cut - 24.3 MM
Estimated number of uninfested trees to be cut - 33,100

(6) Number of sales - 15

(7) Dates offered or to be offered - all of the sales listed are either in progress and will be completed during the fall of 1965, or they are short-term sales to be sold and completed by December 31, 1966.

Other Control

(1) Treating Units

The Chief has indicated methods of treatment by priority, wherever possible, as follows:

(a) Log insect trees.

(b) Push over and burn (needs Regional Forester's approval).

(c) Fell and burn.

(d) Chemical treat.

The following description of treating units shows composition of unit, number of trees and acres, and planned methods of treatment in accordance with the above priorities.

It is planned to have the main headquarters for the project at the Supervisor's office in St. Anthony with the forest divided into zones, these to be further broken down into units and sub-units to insure systematic treatment of the infestations.

e. Zones

Zone I

This zone includes all infestations on the Spencer District. It does not cross the district boundary and is set up as a separate zone because of its geographical separation from the other infestations.

Units:

Dry Creek - Will be divided into at least three sub-units. Methods will be chemical treatment, fall and burn during winter. Project 6,000 trees on 1,000 acres.

Sheridan Creek - May be divided into at least two sub-units. Includes 750 acres of infestation on alienated land. Methods will be logging, chemical treatment, and fell and burn during the winter. Project 32,000 trees on 5,000 acres.

Keg Creek - Consists of three smaller, separate infestations which will be set up as sub-units. Methods will be chemical treatment and fell and burn during the winter. Project 500 trees on 200 acres.

Zone II

This zone includes all infestations on the Island Park and Ashton Ranger Districts. It is the largest zone and is set up in this manner because of the central location of the main camp, goop dump, and excellent facilities for the project.

Units:

Sawtell Mountain - Will be divided into three sub-units. Method will be chemical treatment due to the scattered nature of the infestation. Project 16,000 trees on 21,500 acres. Includes 1,360 acres of alienated land.

Two Top - Consists of three separate infestations which may or may not be epidemic. They were not epidemic when detected during the fall of 1964. Method will be chemical treatment. Project 1,000 trees on 1,000 acres.

Moose Creek - Will not be divided into sub-units. Methods will be logging and chemical treatment. Project 1,000 trees on 2,630 acres.

Bishop Mountain - Will be divided into at least three sub-units. Methods will be logging, chemical treatment and fell and burn during the winter. Project 10,300 trees on 8,400 acres.

Big Bend Ridge - Will be divided into at least four sub-units. Methods will be logging, fell and burn during the winter, push-over and burn and chemical treatment. Project 32,250 trees on 13,700 acres. Includes 800 acres of alienated land.

Anderson Mill - Will not be divided into sub-units. Methods will be fell and burn in winter and chemical treatment. Project 1,100 trees on 600 acres. Includes 160 acres of alienated land.

Zone III

This zone will include all of the Porcupine, Teton Basin, and Swan Valley Ranger Districts, and two units to be treated on the south side of the Rexburg District. The headquarters for the zone will be at Driggs, Idaho.

Units:

East Teton - May be divided into four sub-units. Methods will be chemical, fall and burn, and push-over and burn. Includes 4,840 acres of alienated land. Project 36,700 trees on 23,700 acres.

Force Account - Includes ten small isolated infestations on the Teton Basin and Swan Valley Districts. Project 250 trees on 200 acres. Methods will be fell and burn in winter and chemical treatment.

Corral Creek - This unit is a small, isolated hot-spot on the Rexburg District which was treated during July 1965. Method will be chemical follow-up treatment. Project 300 trees on 300 acres. It is separate from the main Rexburg infestation.

Table Rock - Will not be divided into sub-units. Adjacent to main Rexburg epidemic infestation, but in a high-value recreation area. Method will be chemical treatment, fall and burn, or push-over and burn. Project 17,000 trees on 3,000 acres. Includes 160 acres of alienated land.

Porcupine - A small unit adjacent to the Porcupine Ranger Station. Project 200 trees on 200 acres. Method will be chemical treatment.

Squirrel Creek - A small unit along the forest boundary where Squirrel Creek crosses the boundary. Method will be chemical or fall and burn. Project 400 trees on 400 acres. Includes 350 acres of alienated land.

Calf Creek - Will not be sub-divided. Located at the head of Calf Creek and was treated during July 1965. Method will be chemical. Project 1,500 trees on 1,000 acres.

Other Areas - Project 4,000 trees on 1,000 acres (estimated).

All figures shown above are estimates based on the best information available. Detailed plans for each zone and unit will be prepared and approved prior to start of work this fall. See the map in the appendix of this plan for locations of zones and units. The summary of trees and acres which are considered practical to treat is as follows:

Total Trees Infested	-	160,500
Total Acres Infested	-	83,830
N.F. Acres Infested	-	75,410
Alienated Acres Infested	-	8,420

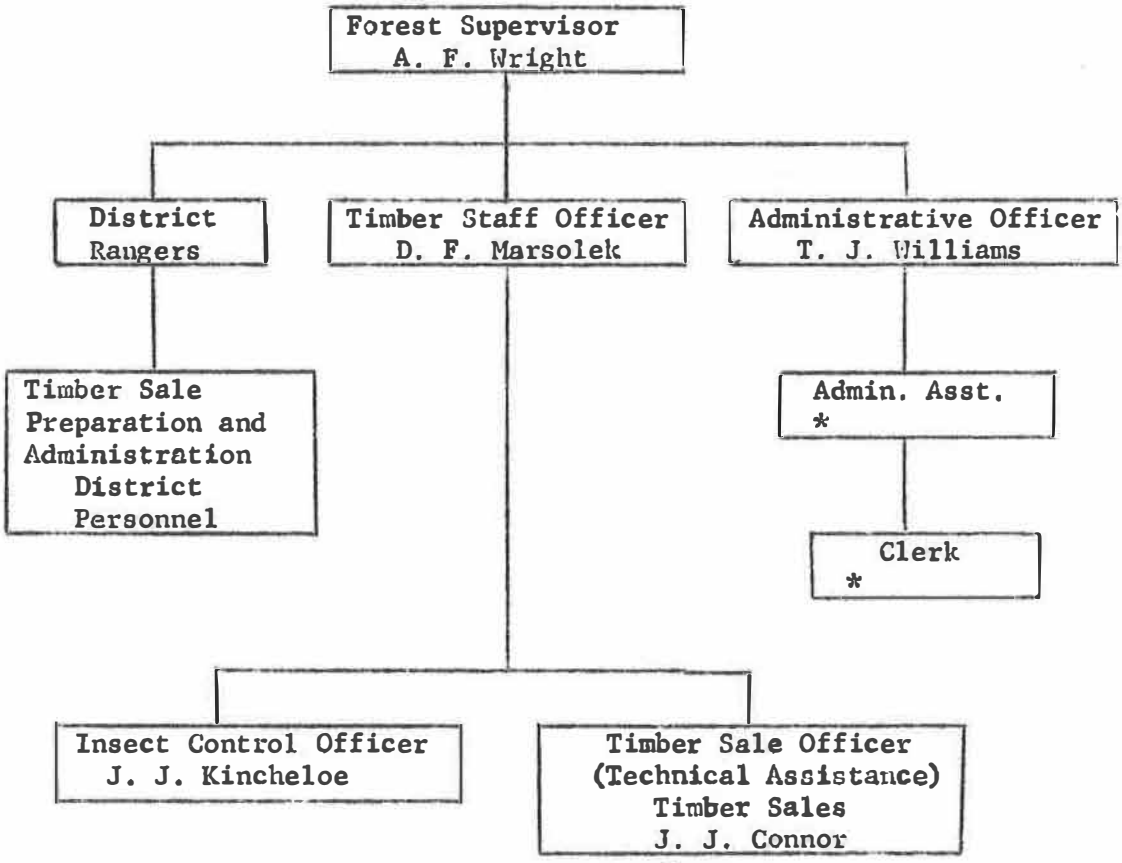
It is impossible to show in this plan how many trees and acres will be treated by each method or how many will be contract or force account. This will be shown when surveys are completed. Surveys will be conducted as soon as the insect flight is completed. (Date to be determined on advice of Regional Forester's entomologists.)

4. Organization

Due to the size and complexity of this project, it is planned to have the Insect Control Officer, under direction of the Timber Staff Officer, directly supervise the entire project, with headquarters in St. Anthony. The project will be divided into three zones (as shown on the attached map). Each zone will have a zone supervisor under supervision of the Insect Control Officer. The zones will be divided into units and further divided into sub-units, where necessary.

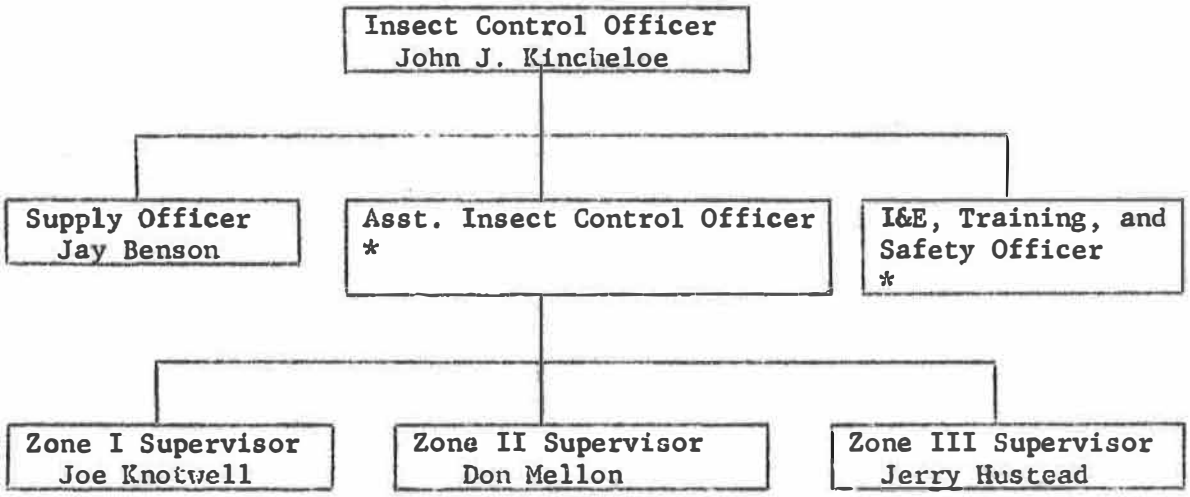
As far as the insect control project is concerned, it is considered advisable for the Insect Control Officer to have line authority within the project organization. The Timber Staff Officer will coordinate the Forest timber sales program with the insect control efforts. The District Rangers will participate in all planning, multiple use coordination and any other factors which might affect management of their districts. Although Rangers will not be involved in the mechanics of the insect treating project, they will prepare and administer timber sales by district personnel. These personnel will not be a part of the zone organization. The following pages outline the entire project organization.

a. Forest Supervisor's Organization (Insect Control)



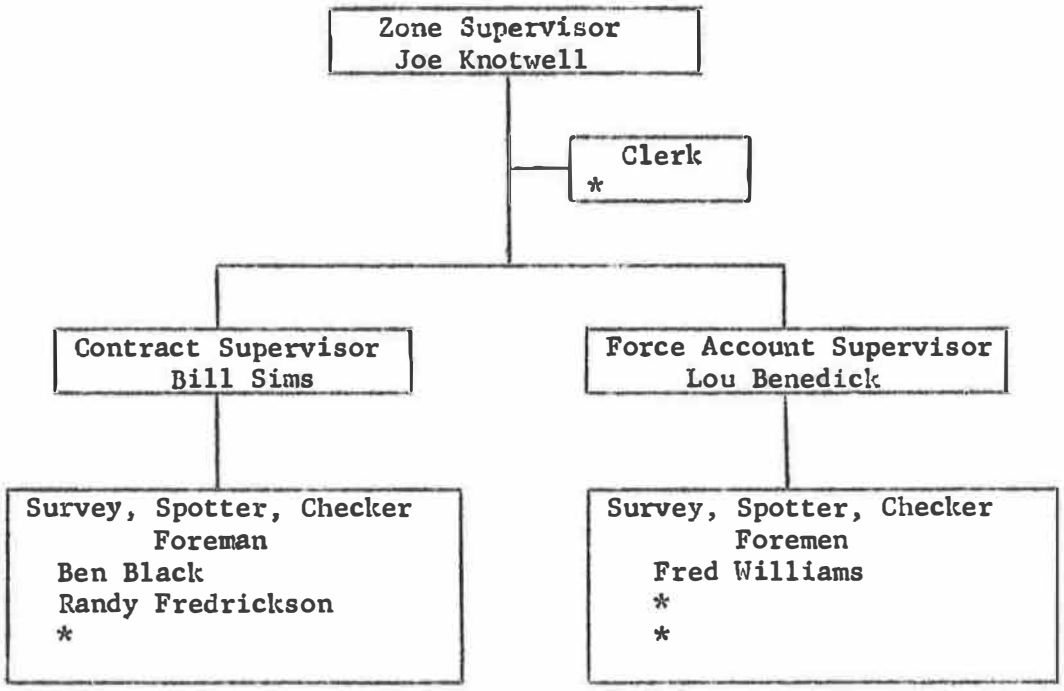
* To be assigned.

b. Insect Control Headquarters Organization - St. Anthony, Idaho



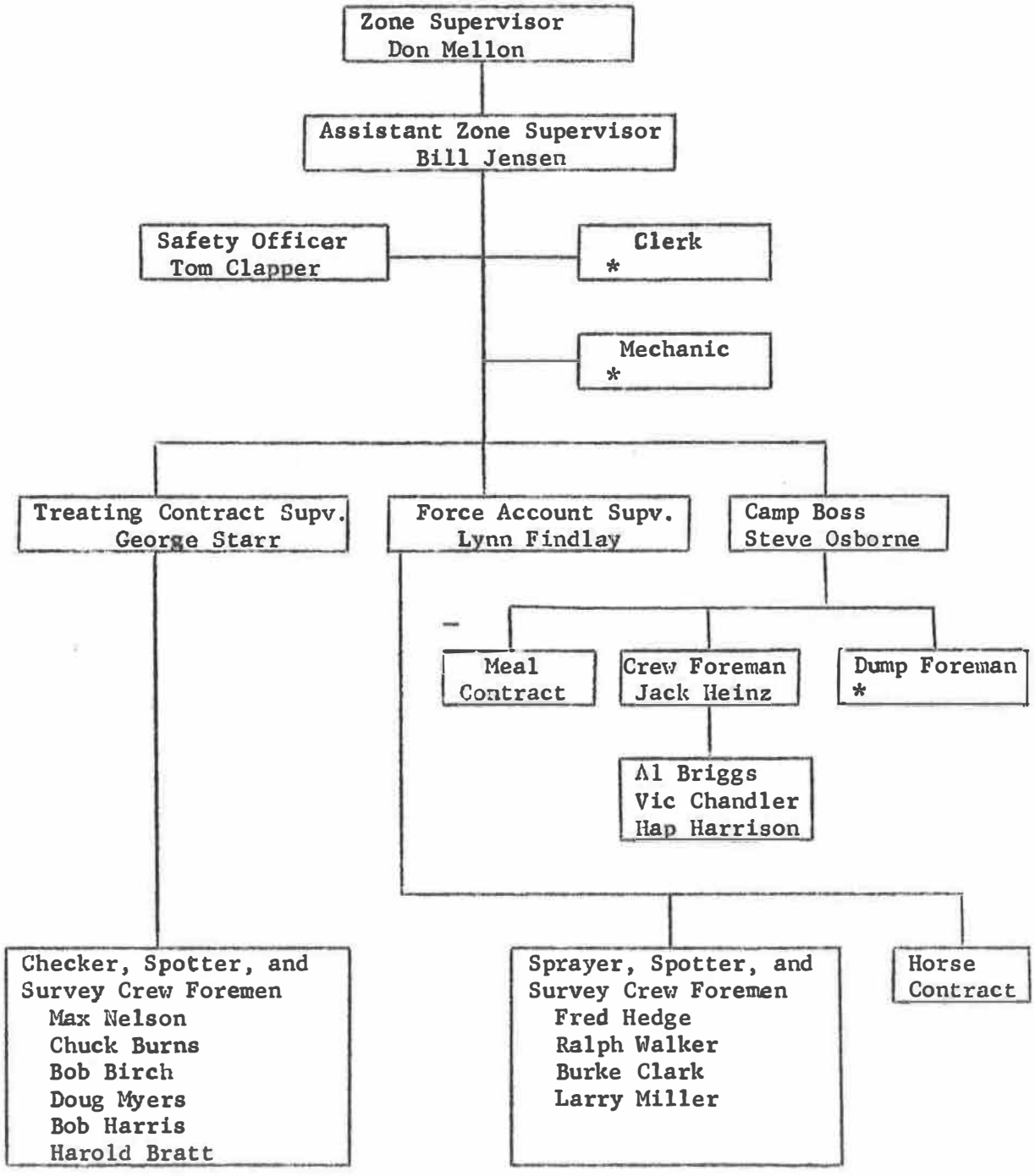
* To be assigned.

c. Zone I Organization - Headquarters at Dubois, Idaho (field headquarters at Kilgore, Idaho)



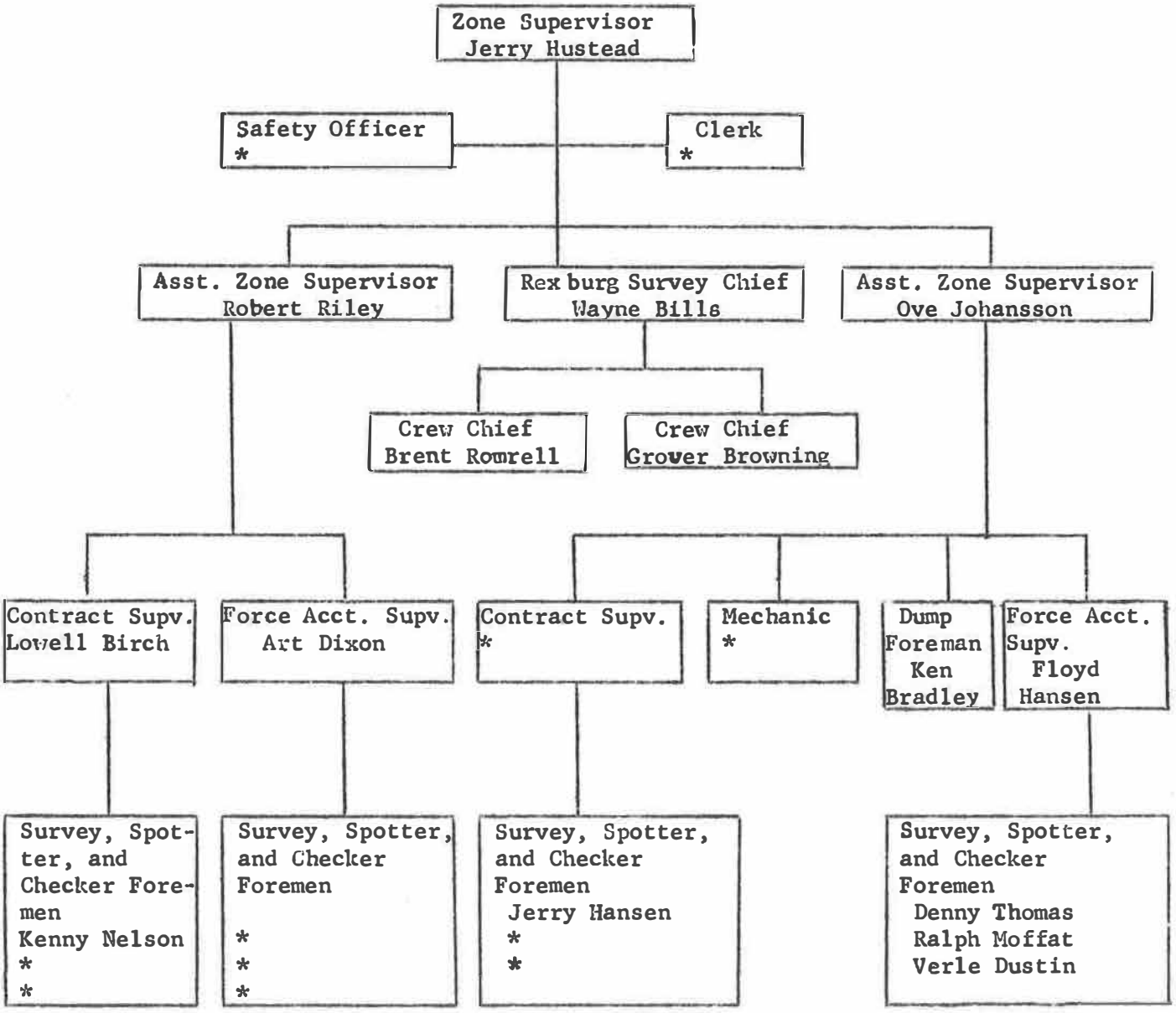
* To be assigned.

d. Zone II Organization - Headquarters at Island Park Ranger Station



* To be assigned.

e. Zone III Organization - Headquarters at Driggs, Idaho



* To be assigned.

f. Other Personnel Needed - By copy of this plan, we are alerting the Regional Forester to the anticipated need for detailers. Most of the available personnel on the forest have been included in the insect control organization. Therefore, it is possible that we will need additional qualified and experienced personnel for insect survey, spotter and checker foremen and crewmen, and mechanics. The following are our anticipated needs:

Type of Detailers	Number	Approximate Period
Mechanics	2	Sept. 15 to Dec. 15
Experienced insect control workers	20	Oct. 1 to Dec. 15

Actual detailer needs will not be known until surveys have been completed and we have more accurate information for insect control. We will use Forest personnel, to the extent possible, to complete the surveys. Detailers will be requested as needed. At least one mechanic will be needed by September 15th to care for vehicles to be used by survey crews. Detailers will be requested through the Regional Forester prior to September 15th.

5. Financial Plan

a. Project Funds Available - $802,457

b. Proposed Coop Funds:

B.L.M. - $2,500

c. Estimated Total Project Costs - $805,000

This does not include any funds planned for treating the main Rexburg infestation other than surveying and timber sale preparation and administration.

d. Breakdown of Estimated Costs:

Insect Control Funds

Funds to Complete F.Y. 1965 Project	$ 30,000
Contract Treating	400,000
Timber Sale Preparation and Administration	25,000
Road Maintenance and Snow Removal	10,000
General Expense Assessment	52,150
Base Salary and Travel — Surveillance money	1,830
Supplies	20,000
Insecticide	51,500
Subsistence	2,360
Equipment	3,000

(Continued)

Insect Control Funds (Cont.)

Salaries	$ 163,900
Travel Expense	14,300
Equipment Rental	17,060
Surveys	13,400
TOTAL:	$ 805,000

Other planned forest funds, from which the insect control project will directly benefit, are as follows:

Timber Sale Preparation and Administration	$ 28,000
Road Construction	265,220
Road Maintenance	60,780
TOTAL:	$ 354,000

e. Financial Controls

(1) Financial Management

Each District Ranger will submit, and have approved by the Forest Supervisor, a 1300-4, Project Work Plan, for timber sale work, RDMA, and clerk salary related to insect control.

Each Zone Supervisor will submit a 1300-4, Project Work Plan, for survey and suppression work on that zone.

The Administrative Officer will allot funds to the districts, according to established procedures. The Zone Supervisors will be notified of the funds, within which they must operate, by the Administrative Officer upon approval of the financial operating plan approved by the Forest Supervisor.

The Insect Control Officer and Zone Supervisors will keep cost records throughout the project. Zone cost records will be reviewed periodically and costs checked against progress. A complete fund review will be held in February of 1966. The Regional Forester will be notified of the financial status of the project immediately following this review. Any necessary adjustments needed will be requested at that time.

(2) Cost Keeping and Analysis

To provide for accurate cost keeping and analysis, all suppression costs will be ADP coded. Each unit will code separately as follows:

Unit	Code
S.O.	30
Districts	By Number
Zone I	16
Zone II	17
Zone III	18

The ADP Code is as follows:

1st Digit

0 - Surveys
1 - Force Account chemical treating.
2 - Fell and burn.
3 - Payment to tree treating contractors.
4 - Spotting for contract areas.
5 - Stringlining for contract areas.
6 - Tree spraying contract administration (include checker foreman and checkers' salaries, travel, supplies, and equipment, etc.).
7 - Project road construction and maintenance (include snow removal).
8 - Camp costs.
9 - Overhead (include only project supervisors and their assistants, clerk, safety officers, S.O. personnel, and quality control officers. All other overhead are field personnel and should be charged to the work they supervise).

2nd Digit

71 - Supplies and miscellaneous
72 - EDB
73 - Meals
74 - Equipment
75 - Salaries
76 - Travel (personal car and per diem)
77 - Equipment Rental (pool and non-pool equipment)
78 - Services

(3) Control Dates

An insect control financial review will be held in February 1966 and on the first and third Tuesdays in June 1966 at the Targhee N.F. Supervisor's Office. Each district and zone will have a record of expenditures to date and their projected expenditures to June 30, 1966. Surpluses or deficits in allotments will be adjusted as needed.

All contract unit tree estimates will be presented at the third Tuesday of June meeting. The money for contract-treating payments will then be balanced between the contracts, or limits set for maximum number of trees to be treated with F.Y. 1966 money.

(4) Examples of Coding

Porcupine District Ranger Salary - 604-914-01-04

Zone I Survey Crewman's Salary - 604-044-01-16-0-0000-0-75

Zone II Contract Checker's Pickup Rental - 604-044-01-17-0-0000-6-77

Insect Control Supply Officer's Salary - 604-044-01-30-0-0000-9-75

Ashton District Clerk Salary - 604-910-01-03

Zone III Clerk Salary - 604-044-01-18-0-0000-9-75

Island Park Insect Timber Sale Preparation and Administration - Forester's Salary - 604-044-01-02

f. Functional Supervision Controls

The Administrative Officer will visit each zone headquarters and make a check of the financial status, contract compliance, plant operation, and other business management activities at the close of each 30 days of operation. Additional trips may be necessary if the Administrative Officer feels things are not up to standard.

A memorandum will be furnished to the Forest Supervisor by the Administrative Officer within 5 days after each 30-day visit outlining briefly his information and any recommended action needed. The first visit will be made to each zone not later than October 31.

The Timber Staff Officer will visit each zone project at least each 30 days beginning on October 15. He will review the overall project operation including the efficiency of the project. He will furnish to the Forest Supervisor a memorandum within 5 days after each trip outlining his findings and list any recommended needed action.

6. Collaboration and Working Agreements

a. Attempts have been made to secure coop funds for treating on alienated lands within or adjacent to the forest. We were successful to the extent that one landowner made a coop deposit and the B.L.M. indicated they would provide funds for treating about 600 acres of their land adjacent to the Teton Basin District.

Agreements will be negotiated on these areas for this project. All other efforts for coop funds from both the State of Idaho and other private land owners have been successful. Such efforts will continue.

Permission has been requested from the Chief to treat infestations that extend onto alienated lands regardless of cooperation. In the event that this is granted, written permission from the landowners to treat on their land will be obtained before such treatment is carried out.

b. There will be chemical, fall and burn, and possibly pushover and burn treating contracts, and horse and subsistence contracts on the various units. These contracts will be prepared now in approved form for completion when survey information is available and awarded as soon as possible so as much work can be done during the fall as possible. We will have all contracts reviewed by the Regional Forester's Insect and Disease Control Branch and P&S contract specialists prior to invitation to bid.

7. Safety and Training

An I&E, Training, and Safety Officer will be assigned to the over-all project. He will periodically check for compliance with the forest, district, and zone safety plans and report to the Insect Control Officer. He will provide assistance to the various units in training, supplies, and information. He will consult with and advise the zone supervisors on any suggestions for improvement of safety practices.

Training - Before any work is started on survey or suppression projects, a formal training session will be held including classroom and field study. The Insect Control Officer will conduct these sessions assisted by the most experienced personnel available. Contractors will receive the same type of training before contract work begins. See appendix A for Safety Coordination Plan.

8. Equipment, Supplies, and Services

a. Maps and photo coverage will be obtained as needed.

b. Insecticide

(1) Amount available -

Pure ethylene dibromide - 6,270 gallons

Mixed ethylene dibromide - 20,000 gallons

Estimated amount needed of mixed insecticide - 300,000 gallons

(2) Mixing Plants - One dump is located at the Island Park Ranger Station with a capacity of 7,000 gallons per day.

Other dumps will be set up in the Teton Basin and Heise areas and are planned for a capacity of 2,000 and 500 gallons per day respectively.

The insecticide to be used will be ethylene dibromide concentrate mixed at a ratio of 1:19 with No. 2 burner oil. This mixture is used at the recommendation of Regional Office Insect and Disease Control personnel as the most proven effective and economical insecticide for the bark beetle, all things taken into consideration.

c. Transportation

(1) Vehicles - The following Insect Control vehicles are available on the Forest for the project:

10 - 1/2 Ton Pickups
2 - 4x4 Carryalls
4 - 4x2 Carryalls
2 - 1½ Ton Trucks
5 - 4x4 Weapons Carriers
1 - 4x4 3/4 Ton Pickup

(Most of these vehicles are old and worn out. If at all possible, equipment section should replace them.)

The following are anticipated vehicle needs in addition to what is listed above:

5 - 1/2 Ton Pickups
4 - 4x4 Carryalls
2 - 1½ Ton Trucks
4 - 4x4 Pickups (3/4 ton)

(These vehicles will be obtained from the regular Forest fleet as much as possible.)

It is planned that two mechanics will be detailed from the Salt Lake or Boise repair shops to take care of maintenance requirements.

(2) Pack Stock - Except for the few animals available on the Forest, it is planned to contract our needs for pack stock.

d. Camps

A large, semi-permanent camp is now located at the Island Park Ranger Station. A small temporary camp will be set up near Kilgore, Idaho. Several small force account tent camps may be needed for isolated treating units. These will be set up as needed.

e. Communications

The present forest radio and telephone net is now considered sufficient for the project. There are five insect control radios available and more will be requested if needed for fall projects by September 15th.

f. Miscellaneous Supplies

The R.O. Insect and Disease Control Branch has a copy of our inventory as of the beginning of the spring 1965 project. These have been depleted to a certain extent, but the major part is still intact. Necessary supplies will be purchased through the regular channels when needs are known and prior to September 15th.

9. Treating Standards

a. Stringlining

(1) All lines will be strung at a height so that large game animals or domestic livestock will not pull them down or break them.

(2) All lines will be tagged at the beginning and end of the line and at five-chain intervals along each line with a manila, buff-colored tag. All tags will show the stringline number and number of chains from beginning. Beginning and ending tags will be labeled as such.

(3) A piece of flagging will be tied around a line tree at each tag so that they may be easily seen. All stringlines strung in the fall will be flagged at least every chain so that they may be easily followed if they have been broken by snow or animals.

(4) Tags and flagging will be attached to the limb of a tree or bush on or adjacent to the stringline.

(5) Distance between stringlines will be as follows:

Pre-spotted areas - three chains wide, not exceeding four at any point.

Spot-and-treat areas - two chains wide, not exceeding three at any point.

(6) Wherever it is necessary to break the stringline, such as across roads ond lakes, a tag will be hung on each side of the break showing stringline number. Where lines cross roads or trails, they will be tagged showing line number.

b. Spotting Specifications

(1) Spotters will be required to spot at least 98 percent of the infested trees on any area. A tree will be considered infested if it has a DBH of 4 inches or more, and contains live, young mountain pine beetle, its larvae or pupae twenty-four inches above the ground line or higher.

(2) Spotting crews will consist of at least three spotters and one crew leader.

(3) Spotters will make a visual check of all live lodgepole pine with a DBH of four inches or greater within a stringline. Only when the visual examination reveals indication of infestation such as frass, pitch tubes, or entrance holes will the spotter chop into a tree.

To check a suspected tree, the spotter will check with his hatchet in not more than three places. He will, therefore, need to inspect each tree at least as close as arm's length.

(4) When an infested tree is found, the tree will be tagged for treating with an orange tag. This tag will be divided by a horizontal perforation across the middle. Each half will be identically numbered. The spotter will mark the stringline number on each half and staple the tag to the tree by the upper edge of the top half, with the tag facing the beginning of the stringline. The opposite side of the tree will be blazed. At least 3 staples will be put into the tag.

(5) Trees will be tagged with consecutive numbers by stringlines as much as possible.

(6) Each person will be permitted to spot only after he has been trained and has demonstrated his capability in determining an infested tree.

c. Spraying Specifications

(1) All infested trees must be sprayed to a height of at least thirty feet or to a four-inch top, whichever is lower.

(2) On trees with an infestation higher than thirty feet, spray crews will fell such trees only if the height of infestation exceeds thirty feet on more than five of the trees in any stringline, and they are not all in a group. If such trees are in groups of 3 or more they will be felled and treated.

If more than five of the trees within a stringline are infested above thirty feet, the sprayers will fell them and spray the entire infested portion. The project supervisor of each unit will be responsible for determining if it is necessary to fell the trees.

(3) Stumps on felled trees will not exceed 12 inches in height on the uphill side. Infested trees adjacent to any body of water which cannot be sprayed standing without having direct streams of the spray falling into the water will be felled away from the water and sprayed on the ground.

(4) Any obstruction of a road or trail caused by felling of trees will be cleared by the spray crew.

(5) All trees, standing or felled, will be sprayed in such a manner that no insecticide flows into a body of water.

(6) Trees which are less than twelve inches DBH will be sprayed on at least three sides. Trees which are over 12 inches DBH will be sprayed on four sides.

(7) In spraying, the sprayer will start spraying at the high point on the tree and spray downward to the base in one slow movement. The insecticide will be sprayed so that it flows down the tree as it is sprayed. A tree will not be considered as being adequately sprayed if it is only dampened.

d. Quality Control

(1) Contract

(a) One hundred percent of the trees treated by a contractor will be checked for compliance with contract specifications.

(b) The forest insect control officer or his assistant will make spot-checks and document on check report form R4-5200-2.

(c) The Regional Office entomologists will be called to periodically check the development of the insects so that treating may be stopped when it is no longer technically practical to continue.

(d) The Regional Office insect control officer or his representative will be asked to check our treating techniques to insure that we are doing the job properly.

(2) Force Account

(a) Each force account treating crew will be checked at least once a week by the project supervisor or his assistant. This check will be documented on a check report (R4-5200-2).

(b) The district file of these check reports will be checked periodically by the forest insect control officer or his representative. They will also spot-check spotting and treating crews.

10. Multiple Use Coordination

Overall planning and project coordination for the entire treating project is assigned to the Insect Control Officer under the direction of the Timber Staff Officer. Multiple use coordination supervision for each individual treating unit is the responsibility of each District Ranger involved, who also has the responsibility for assuring that all phases of the work are conducted in accordance with the management requirements and decisions contained in the Caribou-Targhee Sub-Region Guide and the Ranger District multiple use plans. The Forest Supervisor retains the authority to terminate treating activities if they result in unacceptable impacts on forest resources. A Stage I multiple use survey and report for the entire project has been prepared and approved by the Forest Supervisor. Copies are included with this plan.

No project work will commence until a Stage II multiple use survey and report has been prepared by each District Ranger involved, and approved by the Forest Supervisor. Copies will be made available to all project personnel at the beginning of the project.

11. Information and Education

The Insect Control I&E and Safety Officer will correlate all I&E activities for the insect control project. He will prepare news releases for radio, television, and newspapers. He will also conduct show-me trips to the various project areas.

All insect control news releases, whether prepared by Rangers or others, will be reviewed by the Forest I&E Officer. This is to insure effective coordination of these news releases.

See Appendix B for the I&E plan for the insect control project.

12. Roads

a. There will be no system roads constructed primarily for the insect control project. Roads planned for construction on the forest in the regular planned road construction program will serve the project. Some work roads may need to be constructed from insect project funds depending upon location and control methods of the project.

b. The estimated cost to the project for the maintenance of existing roads is $10,000.

13. Reports and Records

a. Records

Each zone will keep the following records and send to the S.O. at the end of the project:

(1) Daily Record of Expenditures.

(2) Progress map showing daily progress.

(a) Will be 2-inch scale.

(b) Will show stringlining, spotting and spraying and other treating methods as they are completed.

(3) Daily Progress Record (R4-5200-10)

(a) If a unit has both contract and force account treating, a separate record will be kept on each operation.

b. Reports

The following reports will be made as indicated:

	Name of Report	Due	Where	By Whom
(1)	Weekly Progress Report (R4-5200-6)	Friday Monday	S.O. R.O.	Zone Supervisor Insect Control Officer

(This report is due each Monday in the R.O. Therefore, the reporting period will be from Wednesday through the following Tuesday to allow the zone supervisors to have their reports in the S.O. by Friday morning. A 1/2-inch scale progress map should be sent with the report. It will be returned to the zone supervisor after the S.O. progress map is posted each week.)

(2)	Final Project Report	20 days after completion	S.O.	Zone Supervisor
		30 days after completion	R.O.	Insect Control Officer

This report will include the following:

(a) Narrative Report (see FSM 5244.32).

(b) Inventory of all insect control equipment.

(c) Forest Insect and Disease Suppression Report, R4-5200-12 (S.O.). This report must be submitted for each state in which work is done. It will require that expenditure records, trees and acres treated, man-days worked (both force account and contract) be kept for each state by the zone supervisors.

(d) Safety Report - show the following:

Total man-hours worked and miles driven
Number of vehicle accidents.
Personnel accidents including first aid cases, compensation cases, and lost-time accidents.

(e) Copies of daily progress records (R4-5200-10).

(f) Copies of daily expenditure records.

(g) Personnel ratings (Administratively Confidential) - show the following:

Evaluation of each detailer.

Performance list showing each man that worked on the project giving name, position held, rating, and what higher position they could fill (both permanent and temporary).

(h) Pesticide Use Report (R4-5200-13) - for fiscal year only. (S.O.)

(i) Treating maps (1" scale) - show the following:

Number of trees by units.

Number of acres by units.

This should be shown by units as indicated on the treating plan maps.

(3) Inventory

A complete inventory will be kept of insect control equipment, by each zone supervisor for his zone. The Insect Control Supply Officer will keep a complete inventory of all equipment on the forest and report to the Insect Control Officer.

15. Planned Work Schedule

Job	Planned Accomplish Date	Accomplished
Complete Master Plan	8/4/65	
Initial Zone Planning Meeting	8/5/65	
Aerial Reconnaissance Flights	8/9-8/13/65	
Complete Zone Survey Plans	9/10/65	
Order Supplies	8/18/65	
Order Vehicles	8/18/65	
W.O. and R.O. Inspection	8/31/65	

Job	Planned Accomplish Date	Accomplished
Prepare treating contracts for review	8/20/65	
Prepare subsistence and horse contracts for review	8/20/65	
Let first treating contracts	9/27/65	
Start surveys	9/15/65	
Complete surveys	10/15/65	
Complete letting all contracts	10/22/65	
Start force account treating	9/27/65	
Let contracts for timber sales	10/1/65	
Start timber sale preparation	8/1/65	
Report survey results, revise plans	11/1/65	
Complete treating contracts (if possible)	1/31/66	
Fund roundup meeting	2/10/66	
Report to R.O.	2/11/66	
Final report on fall work	2/20/66	
Make plans for spring work	3/1/66	

APPENDIX A

SAFETY COORDINATION PLAN
Insect Control Project
Targhee National Forest
F. Y. 1966

I. Objective

A. Aid implementation of Forest, District, and Zone safety plans.

B. Assist the Rangers and Zone officers in meeting their safety goals.

II. Responsibility

A. The Zone Supervisor is responsible for the safety program on his Zone.

1. He can delegate the authority for carrying out the safety program to his unit project supervisor, unit safety officer, etc., but not his responsibility.

2. Every project employee is responsible for his own safety, the safety of those he supervises, and the safety of everyone in his vicinity.

3. The Contracting Officer's Representative is reponsible for gaining compliance from the contractor and his employees with regard to the safety clauses in the contract.

B. The S.O. Insect Control Officer is responsible to the Timber Staff Officer for coordinating safety activities on all phases of the insect control project to meet the Forest safety program.

III. Action Plans

A. The project safety plans on each zone will be adhered to by all project personnel.

1. Copies of the weekly safety meetings will be forwarded weekly to the S.O.

a. Included should be a resume of the past week's safety record, including CA-1 cases and near-misses.

2. Reviews of safety plans, safety meeting reports, inspection reports, accident reports, and hazard surveys will be made, and findings discussed with the district safety officer and other involved personnel.

B. Safety Hazard Analysis

The following is a safety hazard analysis report compiled from the district project safety plans:

Ethylene Dibromide (EDB, Goop)

This chemical is caustic; i.e., it will burn the skin and cause blisters. Personnel should handle with care and avoid letting it come in contact with their skin. Any chemical that does get on the skin or clothing should be washed off immediately with soap and water. Contaminated clothing should be thoroughly cleaned before re-use. (Goop dump workers should use plastic, nylon, or neoprene gloves and rubber boots.) Contaminated gloves should not be carried in pockets. The goop dumps should be protected from the public, and vice versa. Spilled goop should be cleaned up immediately, and the dump areas kept clean and orderly.

The chemical is poisonous. Containers should be marked with the word "Poison". Users will see that goop will not reach streams or lakes, damage plants, contaminate soil, or harm birds, fish, or animals.

EDB is flammable. While not explosive, the same fire precautions should be taken with it as with diesel fuel.

Finally, EDB is highly corrosive to aluminum and copper, and should never be put in containers made of any of these materials. Iron and bronze will be affected, but may be used. Natural rubber is disintegrated quickly and should not be used.

Proper Clothing

Hard hats will be worn by all personnel in the woods except those men engaged in the use of pack and saddle stock. Foremen and unit supervisors should see that all their personnel use adequate footgear.

Other items are mentioned under EDB.

Livestock

Only authorized personnel will handle saddle or pack stock. Special training will be given to inexperienced users. Make sure animals are aware of your approach or presence.

Vehicle Use

The features of weather and terrain on which vehicles will be used will necessitate extreme safety considerations and precautions. Particular attention should be given to proper qualification of drivers.

In addition: Loose equipment should not be carried in the same compartment as personnel, make frequent "308's", repair or improve bad road hazards or conditions when possible, turn off engine when dismounting, check both in front and behind vehicle before moving it, do not overload, check mud holes and chuck holes before trying to cross, and no standing in moving trucks.

Hatchets (also axes, saws, stapling hammers, other hand tools)

Keep them sharp. (Use handle and guards on files.) Keep the handles tight. (Wedges are cheap.) No horseplay, no throwing. Carry and store safely.

Game (moose, elk, bear, deer)

Avoid, if possible, but specifically do not harass. It is the season when if you see young animals there must be an anxious mama nearby, and vice versa.

Diesel Fuel

This is a flammable liquid. There should be no smoking within 50 feet. Containers should be tagged and grounded. Refer to F.S. Health and Safety Code, Section 3.3.

Camp Facilities

Provide and check for: proper sanitation, wiring, steps, water test, gas fittings, orderliness.

General

Refer to F.S. Health and Safety Code, Section 8, for proper signing and color coding.

APPENDIX B

INFORMATION AND EDUCATION PLAN
Insect Control Project
Targhee National Forest
F. Y. 1966

I. Introduction

The purpose of this plan is to provide for getting accurate information to the public concerning the insect problem, what the Forest Service is doing about it, and how. This must be done in order to gain their understanding and support. The public has the right to know what their tax dollars are accomplishing. The insect damage and necessity for controlling it must be made known. The methods of control, and the efficiency of the operation should likewise be made clear.

The affects of the insect, if uncontrolled, on the local economy should be made known to those affected. This may include those directly affected, such as timber operators and their employees, owners of neighboring timbered lands; or those indirectly affected, such as the motel, hotel, cafe, and filling station operations who serve the traveling public. The probable spread of the infestation and resultant damage, if uncontrolled, would have a sizeable impact on the economies of the local communities.

Similarly, the economies of the towns near the projects will be bolstered by the influx of personnel and equipment brought in to do the insect control work. Approximately $800,000 will be spent on the projects this year, most of which will probably be re-spent in the communities near the projects.

II. Problems

Possible problems of an I&E nature which, while not necessarily anticipated, should be prepared for, include:

A. Opposition to the spraying on the grounds that there are harmful affects on fish, birds, small game, big game, or livestock. While such impressions are false, and should be corrected when encountered, it would be better to disspell such fears before they are voiced. The same is true for any possible fears for public safety due to harmful affects of EDB.

B. Adverse comments on the high expense of the work. It should be brought out that the benefits of the control program outweigh the expense.

C. Opposition to the contracting of the work; likely if contractors bring in manpower from outside areas if there is local labor available. This could become a problem if the contractors' employees conduct themselves badly, such as non-payment of bills, bounced checks, drunkenness, etc. The reasons and advantages for contracting should be make known. Efforts to work with the contractors to handle difficult personnel should be made by the Rangers and C.O.R.'s.

D. Complaints of inefficiency and/or waste. The best way to solve this problem is to insure that there is no basis for it. Contractors, their employees, and new Forest Service employees should be broadly oriented with the insect control program and how it fits into other Forest Service programs. The reasons for rigid contract requirements, close inspections, living conditions, etc., should be explained.

III. Responsibilities

A. The District Rangers are responsible for the I&E program for the projects on their districts and in their zones of influence. Particularly newsworthy items and project news of more than local interest should be forwarded to or brought to the attention of the insect control officer in the S.O. The Rangers and zone supervisors should pay particular attention to seeing that unfavorable information does not originate from Forest Service crews and district personnel.

B. The Insect Control I&E and Safety Officer in the S.O. will be responsible for I&E work at thd S.O. level, and will prepare a display on the mountain pine bark beetle.

IV. Contacts and Media

A. Newspapers

News releases will be made to applicable papers as news items come up, such as:

1. Contract awards

2. Work commences

3. Progress report (mid-project, or weekly)

4. Project completion

B. Radio

1. The program, as scheduled on KRXK, will be prepared by the Insect Control I&E Officer.

2. KRXK and Idaho Falls radio stations will be contacted for additional program possibilities.

3. Newsworthy items will be furnished currently as applicable.

C. Group Presentations

1. Will be made or arranged for interested groups at their request. Forest Service members of these groups will make arrangements with the Insect Control Officer.

APPENDIX C

AN ANALYSIS OF THE MOUNTAIN PINE BEETLE INFESTATION ON THE REXBURG RANGER DISTRICT, TARGHEE NATIONAL FOREST

History of Infestation

Three epidemic infestations of mountain pine beetle have occurred on the Rexburg District in the last 28 years. These appear to follow a 10 to 15 year cycle.

In 1937 some treating was done; however, we were unable to determine the number of trees treated, the extent of infestation, or its duration. The only data we were able to obtain regarding this infestation was from local people living in the area at the time. We have also observed on-the-ground indications of projects being carried on about this time. This evidence is noticeable in certain areas by the presence of piled logs which were burned, trees treated by the standing burn method, felled trees which were treated chemically with a flower garden watering can.

In 1945 a buildup was noted in the Pine Creek drainage and some treating was done. Our records give no indication of the numbers of trees affected. Surveys were conducted in the fall of 1946 and treating was begun in 1947. At this time the infestation was fairly general over the western portion of the district and treating was begun near Hawley Gulch. The project continued through 1950 and covered all of the lodgepole pine type south and west of Canyon Creek. A total of 46,000 trees were treated during this period on approximately 21,000 acres. Four camps were established during this project and were located at Hawley Gulch, Mud Springs, Pine Creek, and Canyon Creek, the latter two being pack camps. Numerous work roads were also constructed but their design was poor; they were never maintained and are no longer serviceable. Many of them have grown over and others have become serious erosion problems. The infestation was arrested on termination of this project.

In 1959 a small project was completed in the Carlton Creek drainage just south of Green Canyon Hot Springs. Our records do not indicate the number of trees treated. In the fall of 1960 a buildup was noted in the Mud Springs and Graham Hollow areas. A small treating program of hot-spotting nature was completed in the spring of 1961 and 2,800 trees were treated. An aerial survey made that fall indicated a general outbreak of the infestation covering the northern portion of the district. The infestation was mostly along the fringes although it did extend into type as much as five miles, was limited primarily to the larger diameter classes of 16" DBH and larger, and contained an estimated 37,000 trees.

In 1961 the timber industry developed a manufacturing plant in St. Anthony with an estimated capacity of 20 MM bd. ft. annually. There were some areas on the district within the infestation where sales could be made. The sales were clearcuts with salvage and insect control objectives. The Graham Hollow sale, comprising 100 acres of infested type and an estimated 500 M bd. ft., was made in October of 1961. An estimated 1,200 infested trees were removed from this sale before insect flight the following spring.

When industry purchased this sale immediate plans were made to accelerate the timber sales program on the district and incorporate sales into the overall treatment program.

In the spring of 1962 a control program was undertaken and everything from the north end of the district to Calamity Creek was treated. Some hot-spotting was done between Calamity Creek and Sheep Creek where sales were not feasible. There were 9,800 trees treated during this project.

The timber sales program continued throughout 1962 and four sales were sold. These sales covered 603 acres of infested type with an estimated volume of 4,485 M bd. ft. The volume from three sales was removed prior to insect flight in 1963 and an estimated 4,500 infested trees were removed.

These sales were all tied to the present transportation system and it became apparent that this system was inadequate to serve the sales potential on the district. A Stage II transportation system was requested from engineering and completed the next spring.

Fall surveys in 1962 indicated 59,500 infested trees and the infestation covered all the lodgepole type from Hawley Gulch north and east to the north end of the district on Crooked Creek. The infested area was fairly solid up to four miles in from the edge of type and in some places extended as far as 8 miles.

Spring programs were planned for 1963 and a total of 17,200 trees were treated. Extremely adverse weather conditions prevented completion of planned work. However, all the area previously treated in the spring of 1962 was re-worked.

The timber sales program continued with two more sales sold representing 108 acres of infested type and an estimated volume of 895 M bd. ft. One sale was logged and 124 acres were cut and an estimated 3,000 infested trees were removed.

Fall surveys in 1963 indicated 75,000 infested trees. The infestation was noted in all the lodgepole pine type with the exception of Pine Creek, and a sizeable proportion of successful attacks were in young, thrifty stands. Infestation intensities ran from 1 to 30 trees per acre. A fall project was undertaken and 7,400 trees were treated before weather conditions forced a shutdown of the project. Four miles of work road were constructed during this project to gain treating access to remote back country.

No treating was done in the spring of 1964 because of a lack of sufficient funds to treat all the infestation on the Forest. The sales program did continue, however, with one sale being completely logged and another nearing completion. An estimated 1,500 infested trees will be removed from these sales before flight next spring. One other sale was sold representing 262 acres with an estimated volume of 1,580 M bd. ft. Four miles of access road were completed on another sale and the sale representing 482 acres and 4,000 M bd. ft. will be advertised before December 31, 1965.

No operational survey was made in 1964 but a reconnaissance and trend survey was made. This consisted of 200 - 1/5th acre plots taken over the entire infestation. Plots were laid out on an aerial mosaic before field work began and spaced to give a representative sample. Infested alien lands were included in this survey. Survey results and our analysis of these results are detailed in the next section of this report.

1964 Reconnaissance and Trend Survey Results

The survey was designed to gain information relative to the general trend of the infestation, major diameter classes of trees being successfully attacked, total extent of the infestation and the relation of alien lands to the overall infestation.

A total of 34,460 acres were surveyed comprised of 28,180 on National Forest, 5,480 State of Idaho, and 800 private. Percent of cruise on National Forest was 1.67 and .85 on State and private.

Survey results indicated 910,200 infested trees on National Forest land and 82,516 on State and private. These figures were derived as a matter of course during tabulation of the survey results. It should be stressed that this survey was not primarily designed to gain this type of information. It is a matter of question how the sample would stand up statistically and it may be these numbers are 50 to 75 percent high.

The following is the analysis of the four basic objectives of the survey as substantiated by field records and observations:

1. General Trend

   The general trend of the infestation is upward and has been since the 1960 fall survey. However, the trend on private land seems to be level and it is our best estimate there will be an immediate down trend on these lands. These lands are widely scattered and for the most part are comprised of small narrow stringers of type in the bottoms of the drainages. Most of the lodgepole in these stringers has already been killed.

2. Major Diameter Classes Affected

   The 1960 survey indicated the highest percentage of attack in the 16" DBH range and larger. This trend was also true of the 1961 attacks. General field observations in 1962, however, indicated a large number of attacks falling in the 12" DBH class. In 1963 many new hits were observed in 9-12" DBH material.

   Four diameter ranges were established (0-6", 6-12", 12-20", and 20"+) and each infested tree in the plots were placed in their respective diameter range.

Tabulation of this data showed 5 percent of the hits in the 0-6" diameter class, 67 percent in the 6-12", 26 percent in the 12-20", and 2 percent in the 20" and larger diameter class. General field observations throughout the survey substantiated this as a general trend over the entire infestation.

The older overmature stands have already been heavily killed and the infestation is continuing an upward trend but the loss is now taking place in the younger thrifty stands. Without help from natural factors or treating measures this trend can be expected to continue. Approximately 40 percent of the infested area on National Forest land is comprised of this type.

3. Total Extent of the Infestation

Total extent of the infestation is shown on the attached map.

4. Relation of Alien Lands to National Forest

As previously stated a downward trend is expected on the private land and it is not felt these lands will have any appreciable affect on the future status of the infestation on National Forest. State lands on the western portions of the infestation are a different matter. These lands are immediately adjacent to the Forest and are heavily infested. The Forest lands in this area have some heavy hot spots but are lightly infested. The type is mainly mature sawtimber and highly susceptible to further attack. One sale has already been sold in this area and another will be sold by December 31st. Further sales are not planned as the remaining timber is located on areas considered inoperable. This timber is also located in the heaviest use area on the district and sales of any value could not be made without major revisions or adjustments in the district multiple use guides. The heavy recreational use of this area must be given serious consideration in our management goals.

The State has an active timber sales program in progress and in the long run, this will definitely aid our problem. It is estimated, however, that no appreciable affect will be realized until 1966.

Present Status of Infestation, Probable Future, and Affect on Other Resources

Biological evaluation of brood densities taken this fall indicated high to very high epidemic conditiins in all plots sampled. Plots were relatively well scattered over the entire infestation both as to area and elevation.

As about 95 percent of the lodgepole pine type is presently infested, the boundaries of the infestation will not appreciably increase on the Rexburg District. However, there are areas within these boundaries with only light infestation intensities. Some of them are high value recreation areas. A large portion of the infestation is not accessible from the present transportation system.

Final affects on other resource values are extremely difficult to predict and the following analysis by resource is based on current conditions. These affects will undoubtedly be magnified if the infestation runs its course.

1. Timber

Since the start of the current infestation in 1959, it is estimated that 35 to 40 MM bd. ft. of timber has been lost. Seventy-five percent of this was probably in merchantable sawtimber.

In 1961 an active sales program was begun and up to December 31, 1964 a total of 11,450 M bd. ft. will have been sold. A total of 4,400 M bd. ft. will have been salvaged to that same date.

It is estimated that the allowable cut has been reduced from 75 percent to 80 percent at this time. Future lodgepole pine management on the district has been set back as much as 50 years. Some programs can be continued for the next 2 or 3 years but sales will probably be small, widely scattered, and generally unfavorable to industry. The present transportation system would also need to be expanded. With such an expansion some larger sales may still be feasible.

Small product material has not been affected for thd most part and an active program of post and pole sales can continue to be carried out. There will probably be an increased demand for firewood and dry cellar timbers. This increase would last for about eight years.

There are portions of the infested area containing a mixed DF-LPP stand. These stands appear to be converting to DF and the mortality of lodgepole should hasten this transition.

2. Range

Range values have not and will not be detrimentally affected from the forage standpoint. On the contrary, forage production may increase slightly with the disappearance of crown cover in areas of extremely heavy kill. This would be a relatively short-term situation, however, and would not affect present capacity figures. Some problems can be expected in moving sheep through timbered areas in the next 8 to 10 years as the snags begin to fall. This should not be too serious.

3. Watershed

Watershed conditions have not been materially affected from the insect damage.

4. Wildlife

Wildlife values have not been appreciably affected. Some loss of cover, roosting areas for grouse and squirrel nests have undoubtedly been experienced but the affects are minor. Big game has not been affected at all and browse conditions may improve with the opening of crown cover. This would only affect summer range, however, and would not have any affect on big game populations.

Fisheries values do not appear to have been materially affected by the loss of streamside cover. Some affects will probably be felt in the future.

5. Recreation

Recreation values have been materially decreased in several NFORR sites with the loss of timber cover. Additional sites will be more severely affected in the future. Some loss is occurring in the vicinity of the Cold Springs and Tablerock Campgrounds. Heavy losses in these vicinities will be very detrimental to recreational values.

Esthetic values have been seriously reduced within the entire infested area. This loss will become more pronounced.

Huckleberry stands in the Kelly Canyon-Hawley Gulch area could be reduced in total acreage as crown cover opens with mortality. Field observations in this area have indicated a definite huckleberry-lodgepole relationship. The huckleberries in this vicinity are an important recreational resource. There has not been any appreciable affect as yet.

6. Other

Of special importance has been the increased fire hazard on the district. This problem is becoming more pronounced each year with the increasing number of snags and current "red tops". These pose an extremely serious fire hazard and the next two years will be very critical. It is entirely possible that with the right conditions a large fire could occur and it is even possible it could cover half or more of the infested area.

In the event of such an occurrence resource values would be almost totally destroyed on the burned area for many years.

APPENDIX D

MAP LEGEND

Units:

Zone I

1. Dry Creek
2. Sheridan Creek
3. Keg Creek

Zone II

1. Two Top
2. Sawtell Mountain
3. Moose Creek
4. Bishop Mountain
5. Big Bend Ridge
6. Anderson Mill

Zone III

1. Porcupine
2. Squirrel Creek
3. Calf Creek
4. Other Areas
5. East Teton
6. Force Account
7. Corral Creek
8. Table Rock
9. Main Rexburg Infestation